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As indicated

NEW-TYPE SOVIET ABRASIVE WHEELS

BLACK SILICON CARBIDE WHEELS FOR GRINDING HARD-ALLOY TOOLS -- Moscow, Stanki i Instrument, May 52

Hard-alloy tools are ground well with grinding wheels made of green silicun carbide.

Research and operation under production conditions have shown that hardalloy tools can also be ground with wheels made of black silicon carbide. The quality of grinding corresponds to the seventh or eighth class of surface finish. Cracking or searing is nonexistent.

The expediency of using these wheels is that one ton of black silicon carbide costs 1,200 rubles less than a ton of green silicon carbide.

In grinding VK3, VK6, VK8, T5K10, and T15K6 hard-alloy tipped tools without a coolant, best results are obtained if the black silicon carbide wheels have a grain size of 46 and hardness of M2 or M3.

In grinding with a coolant, the possibilities of using grinding wheels made of black silicon carbide increase considerably; hard alloys T30K4 and T60K6 can be ground with them.

The use of a coolant increases the productivity of grinding ε_3 10-20 percent as compared with dry grinding, and improves the surface finish by an average of one class. A 3-5 percent emulsion or 5 percent some solution must be used for the coolant. The coolant is fed in a continuous jet at a rate of ℓ -8 liters per minute.

Figure 1 /appended/ gives data on the productivity of grinding various hard alloys with wheels made of green and black silicon carbide at a wheel speed of 12-14 meters per second, depending on the cross feed:

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Grinding was done with wheel 46MZ /sic 46M3?7 without a coolant. Analogous interdependencies were obtained in grinding with the use of a coolant.

According to the graph, the productivity of grinding with a black silicon carbide wheel is somewhat higher than with a green silicon carbide wheel.

It was determined by observation that an increase in productivity ceases when the cross feed exceeds 0.06 millimeter and the peripheral speed exceeds 20 meters per second. The best results in both productivity and surface quality are obtained in grinding with a longitudinal feed in the range of 1.0-1.5 meters per minute.

The table below gives data on the surface finish obtained with wheels of different designations and at various cross feeds:

Designation of	Type of Hard	Grinding	Cross Feed (mm/double strokes)					
Wheels	Alloy	Conditions	0.02	0.03	0.04	0.05	0.06	
K246M2	VK3	With coolant	1.0	1.05	1.05	1.1	1.2	
		Without coolant	1.1	1.2	1.3	1.5	1.75	
		With coolant	0.5	0.6	0.65	0.75	0.80	
		Without coolant	0.8	0.85	0.90	1.05	1.20	
ксh4 <i>6</i> м2	∫ vкз {	With coolant	0.95	0.97	1.0	1.05	1.10	
		Without coolant	1.1	1.15	1.20	1.35	1.45	
	T15K6	With coolant	0.65	0.67	0.70	0.75	0.80	
		Without coolant	0.60	0.75	0.90	0.95	1.00	
kz4 <i>6</i> sm1	т15к6	With coolant	0.80	0.83	0.85	0.90	0.95	
		Without coolant	1.5	1.6	1.ć5	1.80	1.95	
Kch46sM1	т15к6	With coolant	0.70	0.75	0.80	0.35	0.90	
		Without coolant	1.20	1.23	1.25	1.40	1.50	
KZ.80SMI	T15K6	With coolant	0.55	0.65	0.75	0.85	0.90	
		Without coolant	1.30	1.40	1.50	1.70	1.85	





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Designation of Wheels	Type of Hard Alloy	Grinding Conditions	Cross Feed (mm/double strokes)				
HITCEIB			<u>0</u> . <u>J2</u>	0.03	0.04	0.05	0.06
KCh2OSM1	7 т15к6	With coolant	0.55	0.65	0.70	0.80	0.90
_sic; KCh8OSM17		Without coolant	100	1.1	1.2	1.30	1.45

NOTE: Height mean square is giv 1 in microns.

Wheels made of black silicon carbide produce a better surface finish than wheels made of green silicon carbide.

Figures 2 and 3 \sqrt{a} ppended show the life of wheels made of black and green silicon carbide of different hardness.

Research work on wheels made of black silicon carbide has shown that by conforming to the above-specified conditions, they can be used successfully in grinding single-carbide hard alloys and certain types of two-carbide alloys, for example, T5K1O and T15K6. -- B. S. Korshunov and L. K. Petrosyan

FLEXIBLE GRINDING WHEELS SAVE TOOL METAL, INCREASE LABOR PRODUCTIVITY -- Moscow, Komsomol'skaya Pravda, 29 Jul 53

Flexible grinding wheels are being used successfully in Soviet industry for grinding curved grooves 1--2 millimeters wide.

In making flexible grinding wheels, a piece of crude rubber is softened between rollers. An abrasive powder is sprinkled and intermixed with the rubber, after which this mass is rolled and cut in circles. Depending on the purpose for which the wheel is to be used, its thickness ranges from several millimeters to 2-3 centimeters. The wheel is placed on a pan and put in a vulcanizing furnace at a temperature of 70-80 degrees /centigrade/ for 30 minutes. When it emerges, it is a strong, flexible, and elastic rubber with grains of abrasive powder virtually "soldered" in it.

Drills, taps, milling cutters, and other tools in which flutes and grooves have been ground with flexible wheels operate tetter and last longer than those ground with ordinary wheels. This new type of grinding tool is making it possible to save expensive tool metal and increase labor productivity.

These wheels are being used very extensively in grinding irregularly shaped parts. For example, the body of passenger cars is ordinarily finished with emery cloth before painting. Areas that are not easily accessible with emery cloth are now ground with flexible grinding wheels.

| page 4, for earlier report on flexible grinding wheels.

Appended figures follow.7

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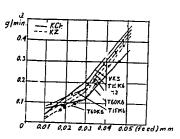
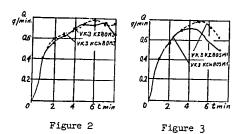


Figure 1

KCh - Black silicon carbide wheels KZ - Green silicon carbide wheels



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